

$a_2(1320)$ $I^G(J^{PC}) = 1^-(2^{++})$ **$a_2(1320)$ MASS**VALUE (MeV)DOCUMENT ID**1318.3±0.6 OUR AVERAGE** Includes data from the 4 datablocks that follow this one.
Error includes scale factor of 1.2. **3π MODE**VALUE (MeV)EVTSDOCUMENT IDTECNCHGCOMMENT

The data in this block is included in the average printed for a previous datablock.

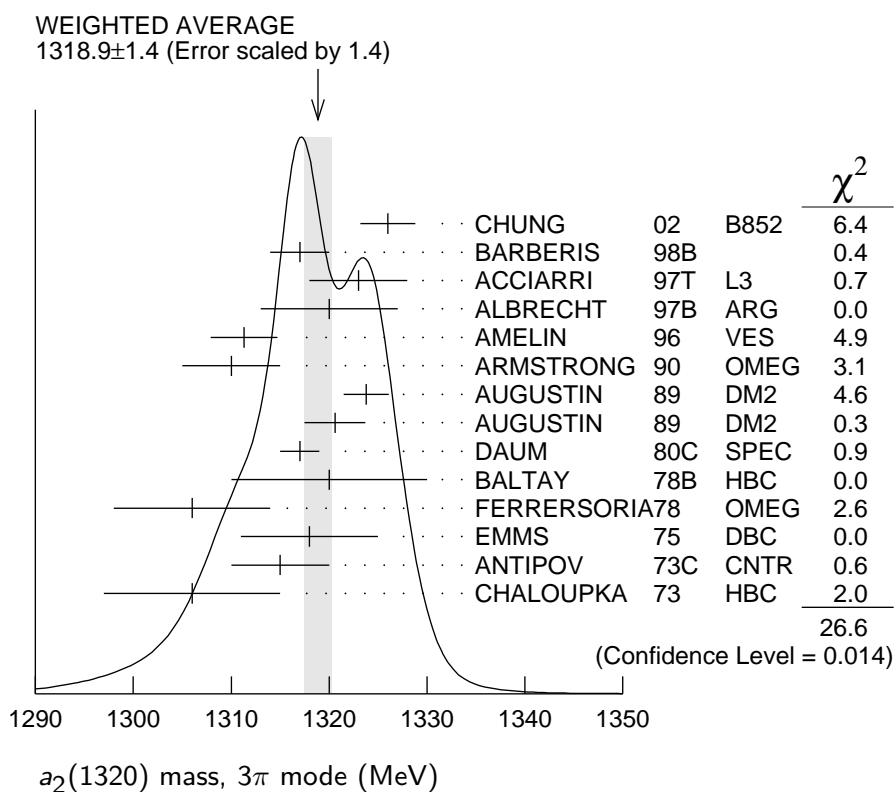
1318.9± 1.4 OUR AVERAGE

Error includes scale factor of 1.4. See the ideogram below.

1326	± 2	± 2	CHUNG	02	B852	$18.3 \pi^- p \rightarrow \pi^+ \pi^- \pi^- p$
1317	± 3		BARBERIS	98B		$450 pp \rightarrow p_f \pi^+ \pi^- \pi^0 p_s$
1323	± 4	± 3	ACCIARRI	97T L3		$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
1320	± 7		ALBRECHT	97B ARG		$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
1311.3± 1.6±3.0	72.4k		AMELIN	96 VES		$36 \pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$
1310	± 5		ARMSTRONG	90 OMEG 0		$300.0 pp \rightarrow p p \pi^+ \pi^- \pi^0$
1323.8± 2.3	4022		AUGUSTIN	89 DM2	\pm	$J/\psi \rightarrow \rho^\pm a_2^\mp$
1320.6± 3.1	3562		AUGUSTIN	89 DM2	0	$J/\psi \rightarrow \rho^0 a_2^0$
1317	± 2	25k	¹ DAUM	80C SPEC	—	$63.94 \pi^- p \rightarrow 3\pi p$
1320	± 10	1097	¹ BALTAY	78B HBC	+0	$15 \pi^+ p \rightarrow p 4\pi$
1306	± 8		FERRERSORIA	78 OMEG	—	$9 \pi^- p \rightarrow p 3\pi$
1318	± 7	1.6k	¹ EMMS	75 DBC	0	$4 \pi^+ n \rightarrow p (3\pi)^0$
1315	± 5		¹ ANTIPOV	73C CNTR	—	$25.40 \pi^- p \rightarrow p \eta \pi^-$
1306	± 9	1580	CHALOUPKA	73 HBC	—	$3.9 \pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1300	± 2	± 4	18k	² SCHEGELSKY	06 RVUE 0	$\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$
1305	± 14			CONDО	93 SHF	$\gamma p \rightarrow \eta \pi^+ \pi^+ \pi^-$
1310	± 2			¹ EVANGELIS...	81 OMEG	— $12 \pi^- p \rightarrow 3\pi p$
1343	± 11	490		BALTAY	78B HBC	0 $15 \pi^+ p \rightarrow \Delta 3\pi$
1309	± 5	5k		BINNIE	71 MMS	— $\pi^- p$ near a_2 thresh-old
1299	± 6	28k		BOWEN	71 MMS	— $5 \pi^- p$
1300	± 6	24k		BOWEN	71 MMS	+
1309	± 4	17k		BOWEN	71 MMS	— $5 \pi^+ p$
1306	± 4	941		ALSTON-...	70 HBC	+
						$7 \pi^- p$
						$7.0 \pi^+ p \rightarrow 3\pi p$

¹ From a fit to $J^P = 2^+$ $\rho\pi$ partial wave.

² From analysis of L3 data at 183–209 GeV.



KK MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.					

1318.1 ± 0.7 OUR AVERAGE

1319	± 5	4700	3,4 CLELAND	82B	SPEC	+	$50 \pi^+ p \rightarrow K_S^0 K^+ p$
1324	± 6	5200	3,4 CLELAND	82B	SPEC	-	$50 \pi^- p \rightarrow K_S^0 K^- p$
1320	± 2	4000	CHABAUD	80	SPEC	-	$17 \pi^- A \rightarrow K_S^0 K^- A$
1312	± 4	11000	CHABAUD	78	SPEC	-	$9.8 \pi^- p \rightarrow K^- K_S^0 p$
1316	± 2	4730	CHABAUD	78	SPEC	-	$18.8 \pi^- p \rightarrow K^- K_S^0 p$
1318	± 1		3,5 MARTIN	78D	SPEC	-	$10 \pi^- p \rightarrow K_S^0 K^- p$
1320	± 2	2724	MARGULIE	76	SPEC	-	$23 \pi^- p \rightarrow K^- K_S^0 p$
1313	± 4	730	FOLEY	72	CNTR	-	$20.3 \pi^- p \rightarrow K^- K_S^0 p$
1319	± 3	1500	5 GRAYER	71	ASPK	-	$17.2 \pi^- p \rightarrow K^- K_S^0 p$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1304	± 10	870	6 SCHEGELSKY	06A	RVUE	0	$\gamma\gamma \rightarrow K_S^0 K_S^0$
1330	± 11	1000	3,4 CLELAND	82B	SPEC	+	$30 \pi^+ p \rightarrow K_S^0 K^+ p$
1324	± 5	350	HYAMS	78	ASPK	+	$12.7 \pi^+ p \rightarrow K^+ K_S^0 p$

³ From a fit to $J^P = 2^+$ partial wave.

⁴ Number of events evaluated by us.

⁵ Systematic error in mass scale subtracted.

⁶ From analysis of L3 data at 91 and 183–209 GeV.

$\eta\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.					

1317.7±1.4 OUR AVERAGE

1308	± 9	BARBERIS	00H		$450 pp \rightarrow p_f \eta \pi^0 p_s$
1316	± 9	BARBERIS	00H		$450 pp \rightarrow \Delta_f^{++} \eta \pi^- p_s$
1317	± 1 ± 2	THOMPSON	97	MPS	$18 \pi^- p \rightarrow \eta \pi^- p$
1315	± 5 ± 2	⁷ AMSLER	94D	CBAR	$0.0 \bar{p}p \rightarrow \pi^0 \pi^0 \eta$
1325.1±5.1		AOYAGI	93	BKEI	$\pi^- p \rightarrow \eta \pi^- p$
1317.7±1.4±2.0		BELADIDZE	93	VES	$37\pi^- N \rightarrow \eta \pi^- N$
1323	± 8	1000	⁸ KEY	OSPK	$6 \pi^- p \rightarrow p \pi^- \eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1324	± 5	ARMSTRONG	93C	E760	$0 \bar{p}p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
1336.2±1.7	2561	DELFOSSE	81	SPEC	$\pi^\pm p \rightarrow p \pi^\pm \eta$
1330.7±2.4	1653	DELFOSSE	81	SPEC	$\pi^\pm p \rightarrow p \pi^\pm \eta$
1324	± 8	6200	^{8,9} CONFORTO	OSPK	$6 \pi^- p \rightarrow p \text{MM}^-$

⁷ The systematic error of 2 MeV corresponds to the spread of solutions.⁸ Error includes 5 MeV systematic mass-scale error.⁹ Missing mass with enriched MMS = $\eta \pi^-$, $\eta = 2\gamma$. **$\eta'\pi$ MODE**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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The data in this block is included in the average printed for a previous datablock.

1322 ± 7 OUR AVERAGE

1318	± 8	⁺³ ₋₅	IVANOV	01	B852	$18 \pi^- p \rightarrow \eta' \pi^- p$
1327.0	± 10.7		BELADIDZE	93	VES	$37\pi^- N \rightarrow \eta' \pi^- N$

 $a_2(1320)$ WIDTH **3π MODE**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
104.7± 1.9 OUR AVERAGE					
108	± 3 ± 15	CHUNG	02	B852	$18.3 \pi^- p \rightarrow \pi^+ \pi^- \pi^- p$
120	± 10	BARBERIS	98B		$450 pp \rightarrow p_f \pi^+ \pi^- \pi^0 p_s$
105	± 10 ± 11	ACCIARRI	97T	L3	$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
120	± 10	ALBRECHT	97B	ARG	$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
103.0± 6.0± 3.3	72.4k	AMELIN	96	VES	$36 \pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$
120	± 10	ARMSTRONG	90	OMEG	$300.0 pp \rightarrow p p \pi^+ \pi^- \pi^0$
107.0± 9.7	4022	AUGUSTIN	89	DM2	$\pm J/\psi \rightarrow \rho^\pm a_2^\mp$
118.5±12.5	3562	AUGUSTIN	89	DM2	$0 J/\psi \rightarrow \rho^0 a_2^0$
97	± 5	¹⁰ EVANGELIS...	81	OMEG	$- 12 \pi^- p \rightarrow 3\pi p$

96	\pm 9	25k	¹⁰ DAUM	80C	SPEC	—	63.94 $\pi^- p \rightarrow 3\pi p$	
110	\pm 15	1097	¹⁰ BALTAY	78B	HBC	+0	15 $\pi^+ p \rightarrow p 4\pi$	
112	\pm 18	1.6k	¹⁰ EMMS	75	DBC	0	4 $\pi^+ n \rightarrow p(3\pi)^0$	
122	\pm 14	1.2k	^{10,11} WAGNER	75	HBC	0	7 $\pi^+ p \rightarrow \Delta^{++}(3\pi)^0$	
115	\pm 15		¹⁰ ANTIPOV	73C	CNTR	—	25.40 $\pi^- p \rightarrow p\eta\pi^-$	
99	\pm 15	1580	CHALOUPKA	73	HBC	—	3.9 $\pi^- p$	
105	\pm 5	28k	BOWEN	71	MMS	—	5 $\pi^- p$	
99	\pm 5	24k	BOWEN	71	MMS	+	5 $\pi^+ p$	
103	\pm 5	17k	BOWEN	71	MMS	—	7 $\pi^- p$	
• • • We do not use the following data for averages, fits, limits, etc. • • •								
117	\pm 6	\pm 20	18k	¹² SCHEGELSKY	06	RVUE	0	$\gamma\gamma \rightarrow \pi^+\pi^-\pi^0$
120	\pm 40			COND0	93	SHF		$\gamma p \rightarrow \eta\pi^+\pi^+\pi^-$
115	\pm 14	490	BALTAY	78B	HBC	0	15 $\pi^+ p \rightarrow \Delta 3\pi$	
72	\pm 16	5k	BINNIE	71	MMS	—	$\pi^- p$ near a_2 thresh-old	
79	\pm 12	941	ALSTON-...	70	HBC	+	7.0 $\pi^+ p \rightarrow 3\pi p$	

¹⁰ From a fit to $J^P = 2^+$ $\rho\pi$ partial wave.

¹¹ Width errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass.

¹² From analysis of L3 data at 183–209 GeV.

$K\bar{K}$ AND $\eta\pi$ MODES

VALUE (MeV)	DOCUMENT ID
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107 \pm 5 OUR ESTIMATE

110.4 \pm 1.7 OUR AVERAGE Includes data from the 2 datablocks that follow this one.

$K\bar{K}$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
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The data in this block is included in the average printed for a previous datablock.

109.8 \pm 2.4 OUR AVERAGE

112	\pm 20	4700	^{13,14} CLELAND	82B	SPEC	+	50 $\pi^+ p \rightarrow K_S^0 K^+ p$
120	\pm 25	5200	^{13,14} CLELAND	82B	SPEC	—	50 $\pi^- p \rightarrow K_S^0 K^- p$
106	\pm 4	4000	CHABAUD	80	SPEC	—	17 $\pi^- A \rightarrow K_S^0 K^- A$
126	\pm 11	11000	CHABAUD	78	SPEC	—	9.8 $\pi^- p \rightarrow K^- K_S^0 p$
101	\pm 8	4730	CHABAUD	78	SPEC	—	18.8 $\pi^- p \rightarrow K^- K_S^0 p$
113	\pm 4		^{13,15} MARTIN	78D	SPEC	—	10 $\pi^- p \rightarrow K_S^0 K^- p$
105	\pm 8	2724	¹⁵ MARGULIE	76	SPEC	—	23 $\pi^- p \rightarrow K^- K_S^0 p$
113	\pm 19	730	FOLEY	72	CNTR	—	20.3 $\pi^- p \rightarrow K^- K_S^0 p$
123	\pm 13	1500	¹⁵ GRAYER	71	ASPK	—	17.2 $\pi^- p \rightarrow K^- K_S^0 p$

• • • We do not use the following data for averages, fits, limits, etc. • • •

120	\pm 15	870	¹⁶ SCHEGELSKY	06A	RVUE	0	$\gamma\gamma \rightarrow K_S^0 K_S^0$
121	\pm 51	1000	^{13,14} CLELAND	82B	SPEC	+	30 $\pi^+ p \rightarrow K_S^0 K^+ p$
110	\pm 18	350	HYAMS	78	ASPK	+	12.7 $\pi^+ p \rightarrow K^+ K_S^0 p$

¹³ From a fit to $J^P = 2^+$ partial wave.

¹⁴ Number of events evaluated by us.

¹⁵ Width errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass.

¹⁶ From analysis of L3 data at 91 and 183–209 GeV.

$\eta\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.					

111.1± 2.4 OUR AVERAGE

115 ± 20	BARBERIS	00H	450 $p p \rightarrow p_f \eta \pi^0 p_s$
112 ± 14	BARBERIS	00H	450 $p p \rightarrow \Delta_f^{++} \eta \pi^- p_s$
112 ± 3 ± 2	¹⁷ AMSLER	94D CBAR	0.0 $\bar{p} p \rightarrow \pi^0 \pi^0 \eta$
103 ± 6 ± 3	BELADIDZE	93 VES	37 $\pi^- N \rightarrow \eta \pi^- N$
112.2± 5.7	2561	DELFOSSE	$\pi^\pm p \rightarrow p \pi^\pm \eta$
116.6± 7.7	1653	DELFOSSE	$\pi^\pm p \rightarrow p \pi^\pm \eta$
108 ± 9	1000	KEY	6 $\pi^- p \rightarrow p \pi^- \eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
127 ± 2 ± 2	¹⁸ THOMPSON	97 MPS	18 $\pi^- p \rightarrow \eta \pi^- p$
118 ± 10	ARMSTRONG	93C E760 0	$\bar{p} p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
104 ± 9	6200	¹⁹ CONFORTO	73 OSPK — 6 $\pi^- p \rightarrow p \text{MM}^-$

¹⁷ The systematic error of 2 MeV corresponds to the spread of solutions.

¹⁸ Resolution is not unfolded.

¹⁹ Missing mass with enriched MMS = $\eta \pi^-$, $\eta = 2\gamma$.

$\eta'\pi$ MODE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
119±25 OUR AVERAGE			
140±35±20	IVANOV	01 B852	18 $\pi^- p \rightarrow \eta' \pi^- p$
106±32	BELADIDZE	93 VES	37 $\pi^- N \rightarrow \eta' \pi^- N$

a₂(1320) DECAY MODES

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1 3π	(70.1 ± 2.7) %	S=1.2
Γ_2 $\rho(770)\pi$		
Γ_3 $f_2(1270)\pi$		
Γ_4 $\rho(1450)\pi$		
Γ_5 $\eta\pi$	(14.5 ± 1.2) %	
Γ_6 $\omega\pi\pi$	(10.6 ± 3.2) %	S=1.3
Γ_7 $K\bar{K}$	(4.9 ± 0.8) %	
Γ_8 $\eta'(958)\pi$	(5.3 ± 0.9) × 10 ⁻³	
Γ_9 $\pi^\pm\gamma$	(2.68 ± 0.31) × 10 ⁻³	
Γ_{10} $\gamma\gamma$	(9.4 ± 0.7) × 10 ⁻⁶	
Γ_{11} e^+e^-	< 6 × 10 ⁻⁹	CL=90%

CONSTRAINED FIT INFORMATION

An overall fit to 5 branching ratios uses 18 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 = 9.3$ for 15 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_5	10				
x_6	-89	-46			
x_7	-1	-2	-24		
	x_1	x_5	x_6		

$a_2(1320)$ PARTIAL WIDTHS

$\Gamma(\eta\pi)$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	Γ_5
• • • We do not use the following data for averages, fits, limits, etc. • • •						
18.5 \pm 3.0	870	²⁰ SCHEGELSKY 06A	RVUE	0	$\gamma\gamma \rightarrow K_S^0 K_S^0$	
20	From analysis of L3 data at 91 and 183–209 GeV, using $\Gamma(a_2(1320) \rightarrow \gamma\gamma) = 0.91$ keV and SU(3) relations.					

$\Gamma(K\bar{K})$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	Γ_7
• • • We do not use the following data for averages, fits, limits, etc. • • •						
7.0 \pm 2.0 -1.5	870	²¹ SCHEGELSKY 06A	RVUE	0	$\gamma\gamma \rightarrow K_S^0 K_S^0$	
21	From analysis of L3 data at 91 and 183–209 GeV, using $\Gamma(a_2(1320) \rightarrow \gamma\gamma) = 0.91$ keV and SU(3) relations.					

$\Gamma(\pi^\pm\gamma)$

VALUE (keV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	Γ_9
287 \pm 30 OUR AVERAGE						
284 \pm 25 \pm 25	7100	MOLCHANOV 01	SELX		$600 \pi^- A \rightarrow \pi^+ \pi^- \pi^- A$	
295 \pm 60		CIHANGIR 82	SPEC	+	200 $\pi^+ A$	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
461 \pm 110		²² MAY	77	SPEC	\pm 9.7 γA	

22 Assuming one-pion exchange.

$\Gamma(\gamma\gamma)$

VALUE (keV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	Γ_{10}
1.00±0.06 OUR AVERAGE						
0.98±0.05±0.09		ACCIARRI	97T	L3	$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
0.96±0.03±0.13		ALBRECHT	97B	ARG	$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.26±0.26±0.18	36	BARU	90	MD1	$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.00±0.07±0.15	415	BEHREND	90C	CELL 0	$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.03±0.13±0.21		BUTLER	90	MRK2	$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.01±0.14±0.22	85	OEST	90	JADE	$e^+ e^- \rightarrow e^+ e^- \pi^0 \eta$	
0.90±0.27±0.15	56	23 ALTHOFF	86	TASS 0	$e^+ e^- \rightarrow e^+ e^- 3\pi$	
1.14±0.20±0.26		24 ANTREASYAN	86	CBAL 0	$e^+ e^- \rightarrow e^+ e^- \pi^0 \eta$	
1.06±0.18±0.19		BERGER	84C	PLUT 0	$e^+ e^- \rightarrow e^+ e^- 3\pi$	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.81±0.19 ^{+0.42} _{-0.11}	35	23 BEHREND	83B	CELL 0	$e^+ e^- \rightarrow e^+ e^- 3\pi$	
0.77±0.18±0.27	22	24 EDWARDS	82F	CBAL 0	$e^+ e^- \rightarrow e^+ e^- \pi^0 \eta$	

23 From $\rho\pi$ decay mode.

24 From $\eta\pi^0$ decay mode.

$\Gamma(e^+ e^-)$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT	Γ_{11}
< 0.56	90	ACHASOV	00K	SND	$e^+ e^- \rightarrow \pi^0 \pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<25	90	VOROBYEV	88	ND	$e^+ e^- \rightarrow \pi^0 \eta$

$a_2(1320) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_1 \Gamma_{10} / \Gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.65±0.02±0.02	18k	25 SCHEGELSKY	06	RVUE	$\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$
25 From analysis of L3 data at 183–209 GeV.					

$\Gamma(K\bar{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$

VALUE (keV)	DOCUMENT ID	TECN	COMMENT	$\Gamma_7 \Gamma_{10} / \Gamma$
0.126±0.007±0.028	26 ALBRECHT	90G ARG	$e^+ e^- \rightarrow e^+ e^- K^+ K^-$	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.081±0.006±0.027	27 ALBRECHT	90G ARG	$e^+ e^- \rightarrow e^+ e^- K^+ K^-$	
26 Using an incoherent background. 27 Using a coherent background.				

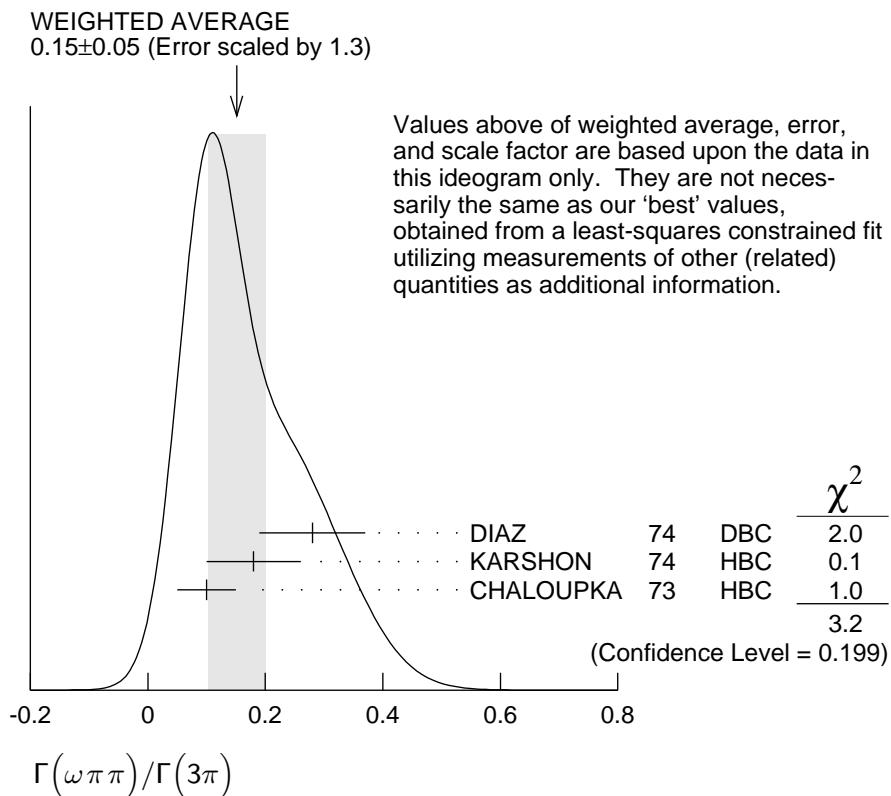
$a_2(1320)$ BRANCHING RATIOS

$[\Gamma(f_2(1270)\pi) + \Gamma(\rho(1450)\pi)]/\Gamma(\rho(770)\pi)$		$(\Gamma_3 + \Gamma_4)/\Gamma_2$			
VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
<0.12	90	ABRAMOVI...	70B	HBC	— 3.93 $\pi^- p$

$\Gamma(\eta\pi)/\Gamma(3\pi)$		Γ_5/Γ_1			
VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
0.207 ± 0.018 OUR FIT					
0.213 ± 0.020 OUR AVERAGE					
0.18 ± 0.05		FORINO	76	HBC	11 $\pi^- p$
0.22 ± 0.05	52	ANTIPOV	73	CNTR	— 40 $\pi^- p$
0.211 ± 0.044	149	CHALOUPKA	73	HBC	— 3.9 $\pi^- p$
0.246 ± 0.042	167	ALSTON-...	71	HBC	+ 7.0 $\pi^+ p$
0.25 ± 0.09	15	BOECKMANN	70	HBC	+ 5.0 $\pi^+ p$
0.23 ± 0.08	22	ASCOLI	68	HBC	— 5 $\pi^- p$
0.12 ± 0.08		CHUNG	68	HBC	— 3.2 $\pi^- p$
0.22 ± 0.09		CONTE	67	HBC	— 11.0 $\pi^- p$

$\Gamma(\omega\pi\pi)/\Gamma(3\pi)$		Γ_6/Γ_1			
VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
0.15 ± 0.05 OUR FIT				Error includes scale factor of 1.3.	
0.15 ± 0.05 OUR AVERAGE				Error includes scale factor of 1.3. See the ideogram below.	
0.28 ± 0.09	60	DIAZ	74	DBC	0 6 $\pi^+ n$
0.18 ± 0.08	28	KARSHON	74	HBC	Avg. of above two
0.10 ± 0.05	279	CHALOUPKA	73	HBC	— 3.9 $\pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.29 ± 0.08	140	28 KARSHON	74	HBC	0 4.9 $\pi^+ p$
0.10 ± 0.04	60	28 KARSHON	74	HBC	+ 4.9 $\pi^+ p$
0.19 ± 0.08		DEFOIX	73	HBC	0 0.7 $\bar{p}p$

²⁸ KARSHON 74 suggest an additional $J = 0$ state strongly coupled to $\omega\pi\pi$ which could explain discrepancies in branching ratios and masses. We use a central value and a systematic spread.



$\Gamma(K\bar{K})/\Gamma(3\pi)$

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	Γ_7/Γ_1
0.070±0.012 OUR FIT						
0.078±0.017		CHABAUD	78	RVUE		
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.011±0.003	29	BERTIN	98B	OBLX	0.0 $\bar{p}p \rightarrow K^\pm K_s \pi^\mp$	
0.056±0.014	50	CHALOUPKA	73	HBC	—	3.9 $\pi^- p$
0.097±0.018	113	ALSTON-...	71	HBC	+	7.0 $\pi^+ p$
0.06 ± 0.03	30	ABRAMOVI...	70B	HBC	—	3.93 $\pi^- p$
0.054±0.022	30	CHUNG	68	HBC	—	3.2 $\pi^- p$

29 Using 4π data from BERTIN 97D.

30 Included in CHABAUD 78 review.

$\Gamma(K\bar{K})/\Gamma(\eta\pi)$

VALUE	DOCUMENT ID	TECN	COMMENT	Γ_7/Γ_5
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.08±0.02	31 BERTIN	98B OBLX	0.0 $\bar{p}p \rightarrow K^\pm K_s \pi^\mp$	

31 Using $\eta\pi\pi$ data from AMSLER 94D.

$\Gamma(\eta\pi)/[\Gamma(3\pi) + \Gamma(\eta\pi) + \Gamma(K\bar{K})]$

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	$\Gamma_5/(\Gamma_1+\Gamma_5+\Gamma_7)$
0.162±0.012 OUR FIT						
0.140±0.028 OUR AVERAGE						
0.13 ± 0.04		ESPIGAT	72	HBC	±	0.0 $\bar{p}p$
0.15 ± 0.04	34	BARNHAM	71	HBC	+	3.7 $\pi^+ p$

$\Gamma(K\bar{K})/\left[\Gamma(3\pi) + \Gamma(\eta\pi) + \Gamma(K\bar{K})\right]$

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
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0.054±0.009 OUR FIT

0.048±0.012 OUR AVERAGE

0.05 ± 0.02	TOET	73	HBC	+	$5\pi^+ p$
0.09 ± 0.04	TOET	73	HBC	0	$5\pi^+ p$
0.03 ± 0.02	8	DAMERI	72	HBC	-
0.06 ± 0.03	17	BARNHAM	71	HBC	+

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.020 ± 0.004 ³²ESPIGAT 72 HBC ± $0.0\bar{p}p$

³² Not averaged because of discrepancy between masses from $K\bar{K}$ and $\rho\pi$ modes.

$\Gamma(\eta'(958)\pi)/\Gamma_{\text{total}}$

Γ_8/Γ

VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.006	95	ALDE	92B	GAM2	$38,100\pi^- p \rightarrow \eta'\pi^0 n$
<0.02	97	BARNHAM	71	HBC	+
0.004 ± 0.004		BOESEBECK	68	HBC	+

$\Gamma(\eta'(958)\pi)/\Gamma(3\pi)$

Γ_8/Γ_1

VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.011	90	EISENSTEIN	73	HBC	-
<0.04		ALSTON-...	71	HBC	+
$0.04 \begin{array}{l} +0.03 \\ -0.04 \end{array}$		BOECKMANN	70	HBC	0

$\Gamma(\eta'(958)\pi)/\Gamma(\eta\pi)$

Γ_8/Γ_5

VALUE	DOCUMENT ID	TECN	COMMENT
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0.037±0.006 OUR AVERAGE

0.032±0.009	ABELE	97C	CBAR	$0.0\bar{p}p \rightarrow \pi^0\pi^0\eta'$
$0.047 \pm 0.010 \pm 0.004$	³³ BELADIDZE	93	VES	$37\pi^- N \rightarrow a_2^- N$
$0.034 \pm 0.008 \pm 0.005$	BELADIDZE	92	VES	$36\pi^- C \rightarrow a_2^- C$

³³ Using $B(\eta' \rightarrow \pi^+\pi^-\eta) = 0.441$, $B(\eta \rightarrow \gamma\gamma) = 0.389$ and $B(\eta \rightarrow \pi^+\pi^-\pi^0) = 0.236$.

$\Gamma(\pi^\pm\gamma)/\Gamma_{\text{total}}$

Γ_9/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.005 \begin{array}{l} +0.005 \\ -0.003 \end{array}$ ³⁴EISENBERG 72 HBC 4.3,5.25,7.5 γp

³⁴ Pion-exchange model used in this estimation.

$\Gamma(e^+e^-)/\Gamma_{\text{total}}$

Γ_{11}/Γ

VALUE (units 10^{-9})	CL%	DOCUMENT ID	TECN	COMMENT
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<6	90	ACHASOV	00K	SND	$e^+e^- \rightarrow \pi^0\pi^0$
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			(ARGUS Collab.)
			(E852 Collab.)
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			(Crystal Barrel Collab.)
			(BKEI Collab.)
			(FNAL, FERR, GENO+)
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			(SLAC Hybrid Collab.)
			(SERP, BELG, LANL, LAPP+)
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			(ARGUS Collab.)
			(MD-1 Collab.)
			(CELLO Collab.)
			(Mark II Collab.)
			(JADE Collab.)
			(DM2 Collab.)
			(NOVO)
			(TASSO Collab.)
			(Crystal Ball Collab.)
			(PLUTO Collab.)
			(CELLO Collab.)
			(FNAL, MINN, ROCH)
			(DURH, GEVA, LAUS+)
			(CIT, HARV, PRIN+)
			(GEVA, LAUS)
			(BARI, BONN, CERN+)
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			(AMST, CERN, CRAC, MPIM+) JP
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